

# Elisabetta Lambertini

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## SKILL SUMMARY

**Areas of interest:** water resources management and public health, watershed land use, ecological engineering, water-energy-food systems, sustainable development.  
**Risk Assessment modelling:** QMRA, population dynamics, epidemiological models and study design, LCA.  
**Environmental microbiology:** molecular epidemiology, pathogen characterization, bioremediation, water quality.  
**Business development:** start-up business plans, project consulting in developing countries, group facilitation, non-profit management.

## EDUCATION

PhD, Civil and Environmental Engineering, University of California, Davis, 2010. Advisor: Prof. Frank J. Loge. Co-advisor: Prof. T.R. Ginn. Dissertation: Acute gastrointestinal illness associated with virus contamination of drinking water in communities served by small groundwater systems. Minor in Environmental Biotechnology.

Laurea (integrated B.S. and M.S.), Environmental Engineering *magna cum laude*, University of Bologna, Italy, 2003. Experimental thesis on soil bioremediation: Role of sorption of contaminants in the bioremediation kinetics of soils polluted by phenolic compounds.

Business Development Certificate, UC Davis Graduate School of Management, 2009.

## RESEARCH EXPERIENCE

**Doctoral research.** UC Davis, 2004-2010. Supervisors: Prof. F.J. Loge, Dr. M.A. Borchardt, Prof. T.R. Ginn.

- Epidemiology and Risk Assessment. Worked on the EPA-funded WAHTER project (Water And Health Trial for Enteric Risk; PI: Dr. Mark A. Borchardt, Co-PI: Dr. F.J. Loge) to assess the risk of enteric illness due to municipal groundwater and distribution systems in rural US communities: helped develop health surveillance questionnaires, developed and implemented risk assessment protocol to assess relative contribution of source water and distribution system to illness risk, performed statistical analyses. 2005-2010.
- Quantification of waterborne pathogens. WAHTER Study: collaborated to the design of the water sampling protocol; designed experiments to test composite virus sampling; employed qRT-PCR to quantify viruses in water samples; contributed to develop an integrated cell culture-PCR technique to quantify infectious viruses in water samples. 2004-2010.
- Ecological Risk. Participated in a NOAA project investigating effect of PAHs exposure on immune response in rainbow trout, using cDNA microarrays to analyze gene expression in liver and kidney tissues. Mar-Sep 2005.
- Modeling microbial processes. Collaborated to an NSF-funded project to model the dynamics of bacterial conjugation in subsurface porous media. PI: Prof. T.R. Ginn. 2006-2008.

**M.S. level research.** Investigated kinetics of biodegradation of phenolic compounds in soils by augmented indigenous bacterial communities, in relation with sorption behavior of the contaminants. Isolated bacterial cultures, performed  $^{14}\text{C}$  respirometry on soil microcosms, applied coupled sorption-biodegradation models. Laboratory advisor: Prof. K.M. Scow, LAWR, UC Davis, 2000-2001. Thesis advisor: Prof. F. Fava, University of Bologna, Italy.

**Undergraduate-level research assistantship.** Assisted in the preparation of field equipment to measure organic matter spatial dynamics in flood plains. Dept. of Agronomy and Range Science, UC Davis, 1999-2000.

## TEACHING EXPERIENCE AND TRAINING

- Associate Instructor, ECI 143 "Green engineering and sustainability", Civil and Env. Eng., UC Davis, Fall 2007.
- TA: Urban Systems and Sustainability, Civil and Environmental Engineering, UC Davis, Winter 2010.
- Seminar on College Teaching, Teaching Resources Center, UC Davis, Spring 2007.

## TECHNICAL SKILLS

Laboratory skills: water sampling, pathogen concentration and elution, quantitative RT-PCR, ICC-PCR, virus enumeration, DNA microarrays, electrophoresis, bacterial cultures, soil microcosms,  $^{14}\text{C}$  respirometry, HPLC, GC.  
Modelling and Data Analysis Skills: risk assessment, dose-response modelling, Monte Carlo simulation, population dynamic models, linear statistical models and experimental design, GLMMs, spatial statistics, statistical data analysis and simulation software (Matlab, R, S+, NCSS, basic C++), basic GIS.  
Language skills: fluent English and Italian, upper-intermediate Spanish, basic German and French.

## PROFESSIONAL DEVELOPMENT

- Emerging Venture Analyst, UC Davis Energy Efficiency Center, 2008-10.
- Green Technology Entrepreneurship Academy, UC Davis Tahoe Center for the Environment, July 2008.
- CAMRA Summer School in Quantitative Microbial Risk Assessment. August 2007, Michigan State University, East Lansing, MI.
- Summer School on "Research and development of remediation technologies for contaminated sites", INCA (National Inter-University Network "Chemistry for the Environment"), Savona, Italy, September 2003.
- Education Abroad Program at the department of Civil and Environmental Engineering, UC Davis, 1999-2000.

## PROFESSIONAL CERTIFICATION

Professional Engineer, Ordine degli Ingegneri di Bologna, July 22, 2004.

## OTHER PROFESSIONAL EXPERIENCE

- Board of Directors member and elected officer, Solar Community Housing Association, 2006-present.
- Field consultant, Appropriate Infrastructure Development Group, Xela, Guatemala, Aug-Sep 2009.
- Board of Directors founding member, UltraV Inc., 2009-ongoing.
- Consulting water engineer, Cooperativa del agua and Foundation for Sustainable Development, Cochabamba, Bolivia, Summer 2006.
- Sales Agent, Fastweb S.p.a., 2004.
- Database development assistant, Artemi S.r.l., Nov 2003 – Mar 2004.
- "Local Agenda 21" Implementation team, Municipality of San Lazzaro, Bologna, Italy. 2002.

## PROFESSIONAL AFFILIATIONS

International Water Association (IWA); American Society for Microbiology (ASM); American Geophysical Union (AGU); AIAT, Association of Engineers for the Environment and Territory of Italy, Bologna chapter (Co-founder, past board member); Engineers Without Borders (EWB).

## ACADEMIC SERVICE

- Session convener, American Geophysical Union (AGU) General Meeting, San Francisco, USA, Dec 2008.
- Session co-chair, International Water Association (IWA) Young Water Professionals Conference, Berkeley, USA, July 2008.
- Graduate Council Committee on Support and Welfare, committee member, 2008-09.
- Women Resources and Research Center volunteer, Women Thrive in Academia project, UC Davis, 2008.
- Mentor for the Mentorship in Engineering Program, UC Davis, Spring 2008.
- Mentor for the Women in Engineering Liaisons, UC Davis, Spring 2006.
- Graduate Student Association representative, UC Davis, 2007-2009.

## PUBLICATIONS

**Lambertini E.**, Spencer S.K., Kieke B., Loge F.J., Borchardt M.A. (submitted to Water Research). Virus contamination from operations and maintenance practices in small drinking water distribution systems.

**Lambertini E.**, Spencer S.K., Bertz P.D., Loge F.J., Borchardt M.A. (2010) New Mathematical Approaches to Quantify Human Infectious Viruses from Environmental Media Using Integrated Cell Culture-PCR. *Journal of Virological Methods* 163: 244-252.

Massoudieh A., Crain C., **Lambertini E.**, Nelson K.E., Barkouki T., L'Amoreaux P., Loge F.J., Ginn T.R. (2010). Kinetics of conjugative gene transfer in granular porous media. *Journal of Contaminant Hydrology* 112(1-4):91-102.

Loge F.J., **Lambertini E.**, Borchardt M.A., Basagaoglu H., Ginn T.R. (2009) Etiological Agent and Pathogen Shedding Affect Epidemiological Data Used to Establish Recreational Water Quality Standards. *Risk Analysis* 29(2): 257-266.

**Lambertini E.**, Spencer S.K., Bertz P.D., Loge F.J., Kieke B., Borchardt M.A. (2008) Concentration and Recovery of Enteroviruses, Adenoviruses, and Noroviruses from Drinking Water with Glass Wool Filters. *Applied and Environmental Microbiology* 74(10): 2990-6.

Massoudieh A., Mathew A., **Lambertini E.**, Nelson K.E., Ginn T.R. (2007) Horizontal gene transfer on surfaces in natural porous media: conjugation and kinetics. *Vadose Zone Journal* 6: 306-315.

## TALKS AND POSTER PRESENTATIONS

**Lambertini E.**, Borchardt M.A., Spencer S.K., Kieke B.A., Bertz P.B., Volenec M.V., Rottscheit C.M., Loge F.J. (2009). Role of distribution system contaminations in the Risk of Viral Gastroenteric Illness associated with Drinking Water. General Meeting of the American Society for Microbiology, Philadelphia, USA, 5/2009.

**Lambertini E.**, Loge F.J., Borchardt M.A., Spencer S.K., Kieke B.A., Bertz P.B., Volenec M.V., Rottscheit C.M. (2008). Do Water Distribution Systems contribute to GI risk? Wisconsin Rural Water Association Meeting, 9/08.

**Lambertini E.**, Spencer S.K., Bertz P.D., Loge F.J., Borchardt M.A. (2007). New Mathematical Approaches to Quantify Human Infectious Viruses from Environmental Media Using Integrated Cell Culture-PCR. American Society for Microbiology General Meeting, Toronto, Canada, 5/2007.

Borchardt, M.A., Spencer S.K., Kieke B.A., Belongia E.A., Bertz P.D., Volenec M.J., Rottscheit C.M., **Lambertini E.**, Loge F.J. (2008). Virus Concentrations in Non-Chlorinated Municipal Drinking Water: Association with Community Rates of Acute Gastrointestinal Illness. American Society for Microbiology General Meeting, Boston, MA, 5/2008.

Massoudieh, A., Ginn T.R., Nelson K.E., Mathew A., **Lambertini E.**, Crain C., Barkouki T., L'Amoreaux P., Loge F.J. (2008). Kinetics of conjugative gene transfer on surfaces in granular porous media. Computational Methods in Water Resources XVII International Conference, San Francisco, CA, 7/2008.

Borchardt, M.A., Spencer S.K., Harrington G.W., Bertz P.D., Volenec M.J., Kieke B.A., **Lambertini E.**, Loge F.J. (2007). Inputs of Viruses into Municipal Drinking Water: Contaminated Groundwater Versus Distribution System Intrusions. General Meeting of the American Society for Microbiology, Toronto, Canada, 5/2007.

Bravo, C.F., Bayne C., Curtis L.R., Loge F.J., **Lambertini E.**, Collier T.K., Arkoosh M.R. (2006). Transcriptional patterns in head kidney of rainbow trout (*Oncorhynchus mykiss*) exposed to polyaromatic hydrocarbons and subsequently challenged with *Aeromonas salmonicida*, Puget Sound Forum, Seattle, WA, 4/2006.

## HONORS AND AWARDS

UC Davis Energy Efficiency Center, Edison International Fellowship, 2008-09.

Little Bang and Big Bang Winner Team, UltraV project, Center for Entrepreneurship, UC Davis, 2009.

UC Davis Center for Entrepreneurship Business Development Fellow, 2008-09.

Full Attendance Fellowship, Green Technology Entrepreneurship Academy, July 2008.

Full Attendance Fellowship, IWA Young Water Professionals Conference, July 2008.

UC Davis Civil and Environmental Engineering Department Fellowship, 2008.

UC Davis Graduate Student Association travel award, Winter 2007.

Full Fellowship, CAMRA Summer School in Quantitative Microbial Risk Assessment, August 2007.

Laurea *magna cum laude*, University of Bologna, 2003.

Education Abroad Program Scholarship, University of Bologna, 1999-2000.